

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1, 12, and 16 are currently being amended. Claims 11, 13-15 and 25 are requested to be cancelled. Claims 26 and 27 are being added. Support for amendments and new claims can be found throughout the Specification and the original claims, for example, in paragraphs [0048], [0051], and [0053]. No new matter is added.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-10, 12, 16-24, and 26-27 are now pending in this application.

Claim Rejections Under 35 U. S. C. § 102

Claims 1-3,5,7,9,16-19, 21, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (US 5,994,233).

Claims 1-4,6,8, 11-15, 20, 22, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Yang et al. (US 6,083,845).

Claims 1-4, 6, 13, 14, 16-19, are rejected under 35 U.S.C. 102(b) as being anticipated by Ko (US 2004/0038546).

Independent claims 1 and 16 are amended to recite that “the composition and supply amount of the gas supplied in said second step are selected in such a way that a protective film is formed on a surface of the underlayer exposed in said opening.”

Chen discloses a method for forming openings in silicon oxide layers by two steps of etching, wherein the first etch step applies higher RF power than the second etch step, and the lower power is applied in the second etch step. However, Chen *fails* to disclose that “the

composition and supply amount of the gas supplied in said second step are selected in such a way that a protective film is formed on a surface of the underlayer exposed in said opening”, as recited in claims 1 and 16.

Yang discloses an etching method to form openings of different depths, and teaches that a byproduct (protective polymer 220) can be formed during the first etching stage (col. 5, lines 39-40). However, although the first and second etching steps have different compositions of etchants for etching and forming a protective polymer, please note that it is the first etching step of Yang that utilizes a composition of etchants for forming a protective byproduct polymer (col. 4, lines 5-25). Indeed, the second etching step uses etchants for etching and removing a byproduct 222 formed in the first etching step (col. 4, lines 5-25). Thus, Yang *fails* to disclose that “the composition and supply amount of the gas supplied in said second step are selected in such a way that a protective film is formed on a surface of the underlayer exposed in said opening”, as recited in claims 1 and 16.

Ko teaches a method for forming an opening through an interlayer to expose an underlying layer surface that retains high etch selectivity. Similar to the method disclosed in Yang, Ko teaches to form a protective film (protective layer) during the first, instead of the second, etching condition. Thus, Ko also *fails* to disclose that “the composition and supply amount of the gas supplied in said second step are selected in such a way that a protective film is formed on a surface of the underlayer exposed in said opening”, as recited in claims 1 and 16.

Claims 2-9 and 12 depend from claim 1, and thus are patentable for at least the same reasons. Claims 17-23 depend from claim 16, and thus are patentable for at least the same reasons. Claims 11, 13-15, and 25 are cancelled, thus the rejections of these claims are now moot.

Claim Rejections 35 U. S. C. § 103

Claims 10 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al, and further in view of Ikeda et al. (US 2002/0039843A1).

As explained above, Yang *fails* to disclose that “the composition and supply amount of the gas supplied in said second step are selected in such a way that a protective film is formed on a surface of the underlayer exposed in said opening”, as recited in claims 1 and 16.

Ikeda is cited for disclosing other features of the claims but fails to cure the deficiencies of Yang explained above.

Thus, claims 10 and 24 should also be allowable for at least the same reasons.

New claims

Newly added claims 26-27 depend from claims 1 and 16, respectively, and further recite that “a third step for removing the protective film formed on the surface of the underlayer, wherein a gas with a composition and a supply amount is supplied in said third step, at least one of said composition and said supply amount of said gas being different from the composition and the supply amount of the gas supplied in said second step.”

Thus, claims 26-27 are patentable for at least the same reasons.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If

any extensions of time are needed for timely acceptance of papers submitted herewith,
Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment
of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date October 8, 2008

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